Remarks

The Office action mailed October 13, 2004, has been reviewed and carefully considered. Dependent claim 21, which recites allowable subject matter according to the Office action, has been rewritten as new independent claim 137. Claim 87, which recites allowable subject matter according to the Office action, has been rewritten as new independent claim 138. Claim 106 has been amended to incorporate the subject matter of claim 109, now canceled, which recites allowable subject matter according to the Office action. The allowance of claims 118-123 is acknowledged. Claim 135 has been amended to incorporate the subject matter of claim 136, now canceled, which recites allowable subject matter according to the Office action. Claims 139-141 have also been added. The pending rejections are traversed for the reasons set forth below.

§102 Rejections

Claims 1, 2, 7, 8, 13, 15, 18, 19, 20, 23, 27, 31, 32, 34, 35, 37, 39, 91, 93, 94 and 135 stand rejected under §102(b) over JP 10027621 (Koga). Independent claim 1 recites a process for introducing a hydrogen-containing feed gas stream that includes at least one contaminant into a **rotary** adsorption module. Similarly, independent claim 31 recites a system that includes a **rotary** adsorption module. The translation of Koga provided by the examiner does not describe a process or system that employs a rotary adsorption module as recited in claims 1 and 31, respectively. Independent claim 13 concerns a process for introducing a hydrogen-containing feed gas stream that includes at least a first contaminant and at least a second contaminant into a pressure swing adsorption module that includes **a first separation zone and a second**

separation zone. Similarly, independent claim 93 recites a system that comprises a pressure swing adsorption module that includes **a first separation zone and a second separation zone**. The translation of Koga provided by the examiner does not describe a process or system that utilizes a pressure swing adsorption module that includes a first separation zone and a second separation zone as recited in claims 13 and 93, respectively. Independent claim 27 recites a process that includes introducing a hydrogen-containing gas stream that includes carbon monoxide into a **rotary** pressure swing adsorption module. Similarly, independent claim 91 recites a system that includes a **rotary** pressure swing adsorption module. The translation of Koga provided by the examiner does not describe a process or system that uses a rotary pressure swing adsorption module as recited in claims 27 and 91, respectively. Claim 135 has been amended to incorporate the subject matter of claim 136, which recites allowable subject matter according to the Office action. Since Koga does not recite all of the features of the independent claims discussed above, the §102(b) rejection over Koga must be reconsidered and withdrawn.

Claims 106, 107, 108 and 110 have been rejected under §102(b) over JP 6334862 (Matsumoto et al.). Claim 106 has now been amended to incorporate the subject matter of claim 109, which recites allowable subject matter according to the Office action. Accordingly, the §102(b) rejection over JP 6334862 (Matsumoto et al.) must be withdrawn.

Claims 106, 108, 110, 111, 124 and 125 have been rejected under §102(b) over Cohen. Claim 106 has now been amended to incorporate the subject matter of claim 109, which recites allowable subject matter according to the Office action. Claims 124 and 125 have been canceled. Hence, the §102(b) rejection over Cohen must be withdrawn.

Claims 1, 2, 7, 8, 13-19, 24, 31, 32, 34, 35, 37, 93, 94, 95 and 135 have been rejected under §102(b) over JP 63228572 (Nakaoka et al.). An English translation of Nakaoka et al. is

attached as Exhibit A (and in the concurrently-filed supplemental IDS). Independent claim 1 recites a process for introducing a hydrogen-containing feed gas stream that includes at least one contaminant into a **rotary** adsorption module. Similarly, independent claim 31 recites a system that includes a **rotary** adsorption module. The translation of Nakoaka et al. does not describe a process or system that employs a rotary adsorption module as recited in claims 1 and 31, respectively. Independent claim 13 concerns a process for introducing a hydrogen-containing feed gas stream into a **pressure swing** adsorption module. Similarly, independent claim 93 recites a system that comprises a **pressure swing** adsorption module. The system and process described in the translation of Nakoaka et al. involves **temperature** swing adsorption rather than pressure swing adsorption (see, e.g., page 4 of the Nakoaka et al. translation). There is no disclosure in the Nakoaka et al. translation of a pressure swing adsorption process or system as recited in claims 13 and 93, respectively. Independent claim 24 has been canceled. Claim 135 has been amended to incorporate the subject matter of claim 136, which recites allowable subject matter according to the Office action. Since the Nakoaka et al. translation does not disclose all of the features of the independent claims discussed above, the §102(b) rejection over Nakoaka et al. must be withdrawn.

Claims 1, 2, 8, 10, 13, 15-18, 24, 27, 31, 32, 34, 35, 37, 91, 93, 94, 95 and 135 have been rejected under §102(b) over JP 04206161 (Yanagi). An English translation of Yanagi is attached as Exhibit B (and in the concurrently-filed supplemental IDS). Independent claim 1 recites a process for introducing a hydrogen-containing feed gas stream that includes at least one contaminant into a **rotary** adsorption module. Similarly, independent claim 31 recites a system that includes a **rotary** adsorption module. The translation of Yanagi does not describe a process or system that employs a rotary adsorption module as recited in claims 1 and 31, respectively.

Independent claim 13 concerns a process for introducing a hydrogen-containing feed gas stream that includes at least a first contaminant and at least a second contaminant into a pressure swing adsorption module that includes **a first separation zone and a second separation zone**. Similarly, independent claim 93 recites a system that comprises a pressure swing adsorption module that includes **a first separation zone and a second separation zone**. The translation of Yanagi does not describe a process or system that utilizes a pressure swing adsorption module that includes a first separation zone and a second separation zone as recited in claims 13 and 93, respectively. Independent claim 24 has been canceled. Independent claim 27 recites a process that includes introducing a hydrogen-containing gas stream that includes carbon monoxide into a **rotary** pressure swing adsorption module. Similarly, independent claim 91 recites a system that includes a **rotary** pressure swing adsorption module. The Yanagi translation does not describe a process or system that uses a rotary pressure swing adsorption module as recited in claims 27 and 91, respectively. Claim 135 has been amended to incorporate the subject matter of claim 136, which recites allowable subject matter according to the Office action. The Yanagi translation fails to disclose all the features recited in the above-discussed independent claims, and thus the §102(b) rejection over Yanagi must also fail.

Claim 29 has been rejected under §102(b) over WO 99/19249 (De Jong et al.). Claim 29 has been canceled.

Claims 1-20, 23, 25, 27, 29, 30-38, 40-42, 88, 91, 93-97, 99, 100, 112-114 and 117 have been rejected under §102(e) over US 2002/0004157 (Keefer et al.). Keefer et al. has an effective §102(e) reference date of March 14, 2001, which is the filing date of U.S. Serial No.

09/808,715.[1] The present application claims priority to Canadian patent applications 2,324,699 titled "Carbon Monoxide Removal from Hydrogen Feed to Fuel Cell" ("the '699 application") and 2,324,702 titled "Reformate Purification and Heat Recovery from Fuel Cell" ("the '702 application"), both of which were filed on October 27, 2000. Certified copies of the Canadian priority applications have been received by the U.S. Patent and Trademark Office. The priority date of the present application, October 27, 2000, is earlier than the March 14, 2001 effective §102(e) date of Keefer et al. Hence, the §102(e) rejection over Keefer et al. must be withdrawn if the Canadian priority applications support the rejected claimed subject matter (see MPEP §706.02(b)).

As noted in applicants' reply mailed on May 14, 2004, the Canadian priority applications support claims 1-20, 23, 25, 27, 31-38, 40-42, 88, 91, and 93-97. Claims 99, 100, 112-114 and 117 are supported in the Canadian priority applications as follows:

Claim 99 – page 6, lines 10-19, and page 25, line 15 – page 26, line 27 of the '702 application; and

Claims 100, 112-114 and 117 – page 13, lines 6-28 of the '702 application.

Accordingly, the pending §102(e) rejection of claims 1-20, 23, 25, 27, 31-38, 40-42, 88, 91, 93-97, 99, 100, 112-114 and 11 over US 2002/0004157 (Keefer et al.) must be reconsidered and withdrawn.

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[1] Keefer et al. does not have an effective §102(e) reference date of September 14, 1999 (the filing date of the parent PCT application) since the PCT application has an international filing date which is prior to November 29, 2000 (see MPEP §2136.03(II)). In addition, Keefer et al. does not have an effective §102(e) reference date of September 14, 1998 (the filing date of the parent provisional application) since "international applications which were filed prior to November 29, 2000 . . . may not be used to reach back (bridge) to an earlier filing date through a priority or benefit claim for prior art purposes under 35 U.S.C. §102(e)." MPEP §2136.03 (III).

§103 Rejections

Claims 3, 4, 9, 28, 38, 43, 88 and 92 have been rejected under §103 over Koga combined with Nishida et al. The same claims have also been rejected under §103 over Nakaoka et al. combined with Nishida et al. The Office action notes on page 7 that Koga "is silent in regards to: the specific adsorbent material used in his process, and the temperature at which the hydrogen-containing gas is introduced into the CO-PSA." A similar statement regarding Nakaoka et al. is made on page 9 of the Office action. Nishida et al. is relied upon by the examiner for supplying these features missing from Koga and Nakaoka et al. However, claims 3, 4 and 9 depend from claim 1 and claims 38, 43 and 88 depend from claim 31. Claims 1 and 31 have been amended to include a **rotary** adsorption module. Nishida et al. does not disclose or suggest a rotary adsorption module, and thus does not compensate for the fatal deficiency in Koga or Nakaoka et al. Similarly, claim 28 depends upon claim 27 which has been amended to include a **rotary** pressure swing adsorption module, and claim 92 depends upon claim 91 which has also been amended to include a **rotary** pressure swing adsorption module. Hence, the §103 rejection over Koga combined with Nishida et al. as well as the rejection over Nakaoka et al. combined with Nishida et al. must be withdrawn.

Claims 112 and 117 have been rejected under §103 over Abersfelder in view of Koga. Claim 112 has been amended to include a **rotary** pressure swing adsorption module, which is not disclosed or suggested in Koga. Accordingly, the §103 rejection over Abersfelder in view of Koga should be reconsidered and withdrawn.

Claim 30 has been rejected under §103 over De Jong et al. combined with Van Dijk et al. Claim 30 has been canceled.

Claims 3, 4, 26, 28, 43 and 98 have been rejected under §103 over Keefer et al. combined with Nishida et al. As noted in applicants' reply mailed on May 14, 2004, the Canadian priority applications support claims 3, 4, 26, 28, 43 and 98, and thus Keefer et al. cannot be relied upon as a basis for an obviousness rejection of these claims.

It is respectfully submitted that the present claims are in condition for allowance. Should there be any questions regarding this application, Examiner Medina Sanabria is invited to contact the undersigned attorney at the telephone number shown below.

Respectfully submitted,

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